

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Kenneth (NMI) Schofield and Mark L. Larson
For : VEHICLE CONTROL SYSTEM AND METHOD
Atty Docket : DON01 P-946

Hon. Commissioner of Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

PRELIMINARY AMENDMENT

Prior to calculation of the filing fees, please amend the application as follows:

In the Title:

Please change the title of the application from:

“AUTOMOTIVE REARVIEW MIRROR, VEHICLE LIGHTING
CONTROL AND VEHICLE INTERIOR MONITORING SYSTEM
USING A PHOTSENSOR ARRAY”

to --VEHICLE CONTROL SYSTEM AND METHOD--.

In the Specification:

Page 1, line 12:

After “Feb. 26, 1993” insert --, now U.S. Pat. No. 5,550,677--.

In the Claims:

Please cancel claims 1-92, and add new claims 93-159 as follows:

93. A vehicle monitoring system, comprising:
an imaging sensor having a field of view of an interior of a compartment of a vehicle
and adapted for capturing an image of at least one imaged object, said imaged object chosen

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from the group comprising a person, an occupant of a seat located in said compartment and a child restraint seat;

an illumination source, said illumination source comprising an infrared illumination source for radiating in a bandwidth that is outside the visible light spectrum; and
a control responsive to an output of said sensor for detecting said imaged object.

94. The monitoring system in claim 93 wherein said compartment comprises an interior cabin of the vehicle.

95. The monitoring system in claim 94 wherein said infrared illumination source comprises a near-infrared source.

96. The monitoring system in claim 93 wherein said infrared illumination source comprises a near-infrared source.

97. The monitoring system in claim 93 wherein said illumination source illuminates at least between about 700 nm and 1200 nm.

98. The monitoring system in claim 94 wherein said illumination source is chosen from at least one of a light-emitting diode and a laser.

99. The monitoring system in claim 96 wherein said illumination source is chosen from at least one of a light-emitting diode and a laser.

100. The monitoring system in claim 97 wherein said illumination source comprises at least one of a light-emitting diode and a laser.

101. The monitoring system in claim 93 wherein said illumination source comprises at least one of a light-emitting diode and a laser.

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102. The monitoring system in claim 101 wherein said light-emitting diode is chosen from the group consisting of a gallium arsenide light-emitting diode and a gallium aluminum arsenide light-emitting diode.

103. The monitoring system in claim 93 including a lens to distribute the illumination of said illumination source.

104. The monitoring system in claim 103 wherein said lens provides illumination in a cone of at least about 100 degrees.

105. The monitoring system in claim 103 wherein said lens provides illumination in a cone in the range from about 100 degrees to about 160 degrees.

106. The monitoring system in claim 93 including an optical filter for said source.

107. The monitoring system in claim 106 wherein said filter is chosen from one of an absorption filter and an interference filter.

108. The monitoring system in claim 106 wherein said filter comprises a long-wave pass absorption filter.

109. The monitoring system in claim 93 wherein said illumination source is adjacent said imaging sensor.

110. The monitoring system in claim 109 including an opaque barrier between said illumination source and said imaging sensor.

111. The monitoring system in claim 93 wherein said illumination source provides illumination only during an exposure period of said imaging sensor.

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112. The monitoring system in claim 93 wherein said imaging sensor comprises an imaging array and wherein said control determines a peak light level of at least one sub-array of said imaging array.

113. The monitoring system in claim 112 wherein said control determines peak light levels of a plurality of sub-arrays of said imaging array.

114. The monitoring system in claim 93 wherein said imaged object is a child restraint seat positioned rearwardly on a seat located in said compartment.

115. The monitoring system in claim 93 wherein said imaging sensor comprises a CMOS camera.

116. A vehicle monitoring system, comprising:
a photosensor array having a field of view of an interior of a compartment of a vehicle and adapted for capturing an image of at least one imaged object;
an illumination source, said illumination source comprising an infrared illumination source for radiating in a bandwidth that is outside the visible light spectrum; and
a control responsive to an output of said sensor for detecting said imaged object, said control being responsive to image information chosen from at least one of presence, size, shape, contour and motion of the imaged object.

117. The monitoring system in claim 116 wherein said compartment comprises an interior cabin of the vehicle.

118. The monitoring system in claim 117 wherein said illumination source comprises a near-infrared source.

119. The monitoring system in claim 116 wherein said infrared illumination source comprises a near-infrared source.

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120. The monitoring system in claim 116 wherein said illumination source illuminates at least between about 700 nm and 1200 nm.

121. The monitoring system in claim 117 wherein said illumination source is chosen from at least one of a light-emitting diode and a laser.

122. The monitoring system in claim 119 wherein said illumination source is chosen from at least one of a light-emitting diode and a laser.

123. The monitoring system in claim 121 wherein said illumination source comprises at least one of a light-emitting diode and a laser.

124. The monitoring system in claim 116 wherein said illumination source comprises at least one of a light-emitting diode and a laser.

125. The monitoring system in claim 124 wherein said light-emitting diode is chosen from the group consisting of a gallium arsenide light-emitting diode and a gallium aluminum arsenide light-emitting diode.

126. The monitoring system in claim 116 including a lens to distribute the illumination of said illumination source.

127. The monitoring system in claim 126 wherein said lens provides illumination in a cone of at least about 100 degrees.

128. The monitoring system in claim 126 wherein said lens provides illumination in a cone in the range from about 100 degrees to about 160 degrees.

129. The monitoring system in claim 116 including an optical filter for said source.

130. The monitoring system in claim 129 wherein said filter is chosen from one of an absorption filter and an interference filter.

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131. The monitoring system in claim 129 wherein said filter comprises a long-wave pass absorption filter.

132. The monitoring system in claim 116 wherein said illumination source is adjacent said imaging sensor.

133. The monitoring system in claim 132 including an opaque barrier between said illumination source and said imaging sensor.

134. The monitoring system in claim 116 wherein said supplemental illumination source provides illumination only during an exposure period of said imaging sensor.

135. The monitoring system in claim 116 wherein said control determines a peak light level of at least one sub-array of said imaging array.

136. The monitoring system in claim 135 wherein said control determines peak light levels of a plurality of sub-arrays of said imaging array.

137. The monitoring system in claim 116 wherein said photosensor array comprises a CMOS camera.

138. A vehicle monitoring system, comprising:

a CMOS camera having a field of view of an interior of a compartment of a vehicle and adapted for capturing an image of at least one imaged object, said imaged object chosen from the group comprising a person, an occupant of a seat located in said compartment and a child restraint seat;

an illumination source, said illumination source comprising an infrared illumination source for radiating in a bandwidth that is outside the visible light spectrum; and

a control responsive to an output of said sensor for detecting said imaged object.

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139. The monitoring system in claim 138 wherein said compartment comprises an interior cabin of the vehicle.

140. The monitoring system in claim 139 wherein said infrared illumination source comprises a near-infrared source.

141. The monitoring system in claim 138 wherein said infrared illumination source comprises a near-infrared source.

142. The monitoring system in claim 138 wherein said illumination source illuminates at least between about 700 nm and 1200 nm.

143. The monitoring system in claim 139 wherein said illumination source is chosen from at least one of a light-emitting diode and a laser.

144. The monitoring system in claim 141 wherein said illumination source is chosen from at least one of a light-emitting diode and a laser.

145. The monitoring system in claim 143 wherein said illumination source comprises at least one of a light-emitting diode and a laser.

146. The monitoring system in claim 138 wherein said illumination source comprises at least one of a light-emitting diode and a laser.

147. The monitoring system in claim 146 wherein said light-emitting diode is chosen from the group consisting of a gallium arsenide light-emitting diode and a gallium aluminum arsenide light-emitting diode.

148. The monitoring system in claim 138 including a lens to distribute the illumination of said illumination source.

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149. The monitoring system in claim 148 wherein said lens provides illumination in a cone of at least about 100 degrees.

150. The monitoring system in claim 148 wherein said lens provides illumination in a cone in the range from about 100 degrees to about 160 degrees.

151. The monitoring system in claim 138 including an optical filter for said source.

152. The monitoring system in claim 151 wherein said filter is chosen from one of an absorption filter and an interference filter.

153. The monitoring system in claim 151 wherein said filter comprises a long-wave pass absorption filter.

154. The monitoring system in claim 138 wherein said illumination source is adjacent said imaging sensor.

155. The monitoring system in claim 154 including an opaque barrier between said illumination source and said imaging sensor.

156. The monitoring system in claim 138 wherein said supplemental illumination source provides illumination only during an exposure period of said imaging sensor.

157. The monitoring system in claim 138 wherein said camera comprises an imaging array and wherein said control determines a peak light level of at least one sub-array of said imaging array.

158. The monitoring system in claim 157 wherein said control determines peak light levels of a plurality of sub-arrays of said imaging array.

159. The monitoring system in claim 138 wherein said imaged object is a child restraint seat positioned rearwardly on said seat located in said compartment.

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REMARKS

Please enter this Preliminary Amendment prior to calculating the fees.

The new claims submitted herein are fully supported by the application as filed.

Accordingly, no new matter is added.

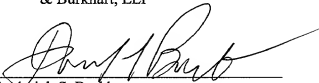
Enclosed is an Information Disclosure Statement.

An early and favorable action on the merits is requested.

Respectfully submitted,

KENNETH (NMI) SCHOFIELD and
MARK L. LARSON

By: Van Dyke, Gardner, Linn
& Burkhardt, LLP



Dated: October 11, 2001.

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